Examining Decision-Making During Crisis Situations Using Simulation Based Approaches

Jessica Grover Johnson

Abstract

Situational awareness (SA) and decision-making are important aspects to safety and effectiveness in most work places, but especially in high-stress, critical healthcare scenarios. Simulation exercises promote hands-on exposure and collaboration on behalf of all group members involved. By studying heuristics and decision-making biases in these types of crisis situations, researchers are able to develop a more parsimonious model for treating such high-stress situations in the most efficient way. When the stress stimuli is increased, the decision-making process can be skewed by heuristics and decision-making biases which could turn ordinary decision-making into a complex process that creates an unsafe environment for the healthcare professional and the patient. Employees from 10 hospitals (N=40) should participate in these simulation exercises in order to properly gauge the decision-making process and our use of heuristics in such chaotic circumstances. A time delay will be introduced to further the real-life simulation of the experiment and a SAGAT questionnaire will be administered to record the personal perspective of all healthcare professionals participating in the research experiment.

Crises can occur in a variety of social, health, monetary or ecological environments. Such situations have proven that the requirement of a particular executive strategy is necessary in handling such difficult situations in the most effective manner for every individual involved. A crisis presents itself unexpectedly and continues to manifest as situational events change very quickly. This fast-paced transformation in environment requires a tremendous amount

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Corresponding Author: Jessica Grover Johnson, jessicagroverjohnson@yahoo.com

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of teamwork and collaboration between all essential parties because however this presenting crisis is managed from the beginning is crucial to how it evolves. Decision-making in these particular events are imperative and should be strategic in order to meet the objectives involved with minimizing risk and maximizing safety.

It is important to note that while there are many high-risk fields, the field that will be examined more thoroughly in this proposal will be the healthcare field. The doctors, nurses, pharmacists and other healthcare professionals are all receiving information and guidance from outside sources (e.g. government agencies, media outlets, co-workers and family). The information that is put out by government agencies and (some) media presents the data and statistical findings, presumptuously the most factual evidence they have about the crisis at hand and what could potentially result in terms of consequences and recommendations on how to proceed (Reynolds and Seegar, 2005). Cognitive psychologists have given opinions about how individuals respond rationally in decision-making and the power of outcome knowledge (Fischhoff, 1975) and availability heuristics (Tversky and Kahneman, 1974) in situations of high uncertainty. Studies regarding decision-making biases and heuristics have intertwined routes in cognitive psychology and areas of the healthcare sector in an attempt to record data in individual and group cognition when faced with a crisis or high-stress situation.

By examining heuristics and reasoning models, a more parsimonious approach to crisis situations can be developed. The purpose of this research proposal is to examine previously documented individual and group behaviors of healthcare professionals (e.g. doctors, nurses, etc.) to distinguish any distinct patterns in peer-to-peer interactions and decision-making processes (and the necessary heuristics) in critical, high-stress situations. Thus, utilizing simulation based research methods could be proven to increase the quality of care and safety of healthcare workers in crisis situations. Often times under the circumstances of a crisis, healthcare professionals are anticipating the shortage of materials that are necessary to mediate the problem. In current times, the global pandemic, COVID-19, has pummeled countries all over the world, a ruthless killer, it has overwhelmed hospitals and caused a shortage in ventilators and much needed personal protective equipment (PPE). Consequently, making decision-making during a time like this, a delicate process of outcome estimation.

Due to the complexity of information that is readily available and the emergent situation in which strategic decisions must be taken, healthcare professionals are often more vulnerable and sometimes unable to efficiently perform their jobs efficiently and effectively in regard to the events surrounding a crisis situation (Tena-Chollet et al., 2016). Research previously conducted suggests simulation exercises can help to further examine the decision-making process in crisis situations through experimental learning (Borodzicz & van Haperen, 2002). Through proper expectation and development of simulated training models healthcare teams are able to develop a shared cognitive model which allows each professional to prioritize responsibilities, ensure safety for co-workers and patients, and to ultimately reduce the stress and anxiety surrounding the situation to optimize patient care. Nonetheless, implementing efficient, yet ethical decision-making processes in times of crisis are the result of acquired ability from theoretical to real- world situations.

A real-world situation seeks to focus on specific tasks that have the largest margin of error in order to make necessary changes for a more efficient protocol design. All simulations should be designed to produce mirroring actions and reactions in individuals that would normally be expected to occur in real-world crisis situations (e.g. stress, hesitation, time restraints, misinformation and irritation). Simulations should vary based on the level of threat present with the crisis (e.g. localized, state wide, global, etc.) and, therefore, should be designed to greatly enhance the readiness of healthcare professional for crisis' involving patients with highly- infectious disease or traumas due to natural disasters. Considering the mishaps in current times of the COVID-19 pandemic, prior simulation-based training exercises could have helped by precisely tracking the rapid spread of the virus, help realistically expect the amount of PPE necessary and dedicate specific treatment rooms to help keep hospitals functioning orderly in times of chaos.

When the stress component is increased (higher chance of death in the patient) during a high-stress crisis situation, healthcare workers are more likely to make errors that affect the quality of patient-care as well as putting themselves in danger. This proposal aims to utilize simulation-based research methods (SBRM) to classify distinctive patterns in peer-to-peer interactions and decision-making processes in crises. Thus, identifying the best measures to be used in the improvement of the quality of care for each patient, increasing the safety of each healthcare worker and patient as well as promoting a more parsimonious model for crisis situations in healthcare systems.

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